AMENDMENTS TO THE CLAIMS

1. (Original) A device for processing a sample comprising
a processing unit having an opening to receive a sample vessel and at least one processing station positioned along the opening, the processing station having a compression member adapted to compress the sample vessel within the opening and thereby displace a content of the sample vessel within the sample vessel.

2. (Original) The device of claim 1, wherein the processing station further comprises an energy transfer element for transferring energy to or from the content within the sample vessel and a control system coupled to the energy transfer element to control the energy transferred to or from the content.

3. (Original) The device of claim 2, further comprising an energy insulator positioned adjacent the processing station.

4. (Original) The device of claim 2, wherein the energy transfer element is at least one of an electronic heat element, a microwave source, a light source, an ultrasonic source and a cooling element.

5. (Original) The device of claim 2, wherein the energy transfer element transfers thermal energy to or from the content within the sample vessel.

6. (Original) The device of claim 2, further comprising a temperature sensor coupled to the control system.

7. (Original) The device of claim 2, wherein the processing station further comprises a heat sink.

8. (Original) The device of claim 1, wherein the processing station includes a stationary member opposing the compression member across the opening, wherein the compression member compresses the sample vessel against the stationary member within the opening.

9. (Original) The device of claim 1, further comprising a driver coupled to the compression member to selectively move the compression member and thereby compress the sample vessel within the opening.

10. (Original) The device of claim 9, wherein the driver is a motor and is coupled to the compression member by a cam.

11. (Original) The device of claim 9, wherein the driver is an electromagnetic actuating mechanism.

12. (Original) The device of claim 1, further comprising at least one sensor for detecting a signal from the content within the sample vessel.

13. (Original) The device of claim 12, further comprising an energy source for applying energy to the content within the sample vessel to generate a signal from the content.

14. (Original) The device of claim 12, further comprising an electrophoresis system comprising a pair of electrodes adapted to have a predetermined voltage difference and an electrode actuator for inserting the electrodes into the sample vessel.

15. (Original) The device of claim 1, further comprising a reagent injector cartridge actuator adapted to receive a reagent injector cartridge having at least one needle in fluid communication with a reagent reservoir, the reagent injector cartridge actuator operable to move the reagent injector cartridge to inject a quantity of reagent into the sample vessel.

16. (Original) The device of claim 1, wherein the content displaced by the compression member is the sample.

17. (Original) The device of claim 2, wherein the content displaced by the compression member is a reagent.

Claims 18-37 (canceled)

38. (Withdrawn) A method of processing a sample within a sample vessel comprising
introducing the sample vessel into a device for processing the sample, and
compressing the sample vessel to move the sample within the sample vessel from a first segment to a second segment of the sample vessel.

39. (Withdrawn) The method of claim 38, further comprising
introducing a reagent to the sample within a segment of the sample vessel.

40. (Withdrawn) The method of claim 38, further comprising heating the sample in the first segment to a first temperature.

41. (Withdrawn) The method of claim 40, further comprising heating the sample to a second temperature in the second segment.

42. (Withdrawn) The method of claim 41, wherein the first temperature is effective to denature the sample and the second temperature is one at which nucleic acid annealing and nucleic acid synthesis can occur.

43. (Withdrawn) The method of claim 41, further comprising
compressing the sample vessel to move the sample within the sample vessel from the second segment to the first segment of the sample vessel, and
heating the sample to the first temperature in the first segment.

44. (Withdrawn) The method of claim 37, further comprising analyzing the sample by detecting a signal from the sample within a segment of the sample vessel, and analyzing the detected signal to determine a condition of the sample.

45. (Withdrawn) The method of claim 44, wherein the step of analyzing further comprises applying an excitation energy to the sample within the segment of the sample vessel.

46. (Withdrawn) The method of claim 44, further comprising conducting electrophoresis analysis of the sample by

applying a selective voltage to the sample within a segment of the sample vessel,

detecting light emitted from the sample, and

analyzing the detected light to determine a condition of the sample.

47. (Withdrawn) The method of claim 37, further comprising

applying an excitation energy to a bio-array member contained within a segment of the sample vessel,

detecting light emitted from the bio-array member, and

analyzing the detected light to determine a condition of the sample.

48. (Withdrawn) The method of claim 37, further comprising

agitating the sample within a segment of the sample vessel.

49. (Withdrawn) The method of claim 37, wherein the sample is a nucleic acid sample.

50. (Withdrawn) A method of treating a sample within a sample vessel, the sample vessel having a plurality of segments including a segment for containing a reagent and a segment for containing the sample, the method comprising

introducing the sample vessel into a device for processing the sample within the sample vessel, and

compressing one of the segments to mix the sample with the reagent within the sample vessel.

51. (Withdrawn) The method of claim 50, further comprising introducing the reagent into a reagent segment of the sample after the step of introducing the sample vessel into the device for processing the sample.

52. (Original) A thermal cycler comprising

a processing unit having an opening to receive a sample vessel containing a sample, the

processing unit having a first processing station, a second processing station, and a third processing station positioned along the opening,

the first processing station including a first compression member adapted to compress the sample vessel within the opening and a first energy transfer element for transferring energy to the sample at the first processing station,

the second processing station including a second compression member adapted to compress the sample vessel within the opening and a second energy transfer element for transferring energy to the sample at the second processing station, and

the third processing station including a third compression member adapted to compress the sample vessel within the opening and a third energy transfer element for transferring energy to the sample at the third processing station, wherein compression of the sample vessel by of one of the compression members displaces the sample within the sample vessel between the processing stations.

53. (New) The thermal cycler of claim 52, further comprising at least one sensor for detecting a signal from the content within the sample vessel.

54. (New) The thermal cycler of claim 53, wherein the sensor comprises an optical sensor for measuring light signal from the contents with the sample vessel.

55. (New) The thermal cycler of claim 54, wherein the light signal comprises fluorescent light.

56. (New) The thermal cycler of claim 53, wherein the sensor monitors the signal from the content within the sample vessel in real time.

57. (New) A thermal cycler comprising

a processing unit having an opening to receive a sample vessel containing a sample, the processing unit having a first processing station and a second processing station positioned along the opening,

the first processing station including a first compression member adapted to compress the sample vessel within the opening and a first energy transfer element for transferring energy to

the sample at the first processing station, and

the second processing station including a second compression member adapted to compress the sample vessel within the opening and a second energy transfer element for transferring energy to the sample at the second processing station, wherein compression of the sample vessel by of one of the compression members displaces the sample within the sample vessel between the processing stations.

58. (New) The thermal cycler of claim 57, further comprising at least one sensor for detecting a signal from the content within the sample vessel.

59. (New) The thermal cycler of claim 58, wherein the sensor comprises an optical sensor for measuring light signal from the contents with the sample vessel.

60. (New) The thermal cycler of claim 59, wherein the light signal comprises fluorescent light.

61. (New) The thermal cycler of claim 58, wherein the sensor monitors the signal from the content within the sample vessel in real time.

62. (New) The device of claim 1, wherein the processing unit further comprises a second processing station positioned along the opening, the second processing station having a second compression member adapted to compress the sample vessel within the opening and thereby displace a content of the sample vessel within the sample vessel.

63. (New) The device of claim 12, wherein the sensor comprises an optical sensor for measuring light signal from the contents with the sample vessel.

64. (New) The device of claim 63, wherein the light signal comprises fluorescent light.

65. (New) The device of claim 12, wherein the sensor monitors the signal from the content within the sample vessel in real time.